

DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

OFFICE ENGINEER

1727 30th Street MS-43

P.O. BOX 168041

SACRAMENTO, CA 95816-8041

FAX (916) 227-6214

TTY 711

*Flex your power!
Be energy efficient!*

August 31, 2012

04-Sol-80-30.6/38.7

04-4A0104

Project ID 0400001101

Addendum No. 1

Dear Contractor:

This addendum is being issued to the contract for CONSTRUCTION ON STATE HIGHWAY IN SOLANO COUNTY IN VACAVILLE AND DIXON FROM 0.6 MILE EAST OF LEISURE TOWN ROAD OVERCROSSING TO 1.0 MILE WEST OF PEDRICK ROAD OVERCROSSING.

Submit bids for this work with the understanding and full consideration of this addendum. The revisions declared in this addendum are an essential part of the contract.

Bids for this work will be opened on Wednesday, September 26, 2012.

This addendum is being issued to revise the Project Plans, the Notice to Bidders and Special Provisions, and the Bid book.

Project Plan Sheets 2, 3, 4, 5, 15, 43, 127, 165 and 171 are revised. Copies of the revised sheets are attached for substitution for the like-numbered sheets.

In the Special Provisions, Section 2-1.015, "PREBID MEETING," is added after Section 2-1.01, "SMALL BUSINESS AND NON-SMALL BUSINESS SUBCONTRACTOR PREFERENCES," as attached.

In the Special Provisions, Section 4, "BEGINNING OF WORK, TIME OF COMPLETION, AND LIQUIDATED DAMAGES," the first paragraph is revised as follows:

"The 1st working day is the later of the 55th day after contract approval or April 15, 2013, except that, if you start work at the job site earlier, that day will be the 1st working day. Preparatory activities not considered as work are:

1. Measuring controlling field dimensions
2. Locating utilities
3. Removing trees
4. Implementing water pollution control requirements
5. Implementing PLAC requirements"

In the Special Provisions, Section 10-1.41, "HOT MIX ASPHALT (LONG LIFE)," is replaced as attached

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In the Bid book, in the "Bid Item List," Item 58 is revised, and Item 60 is deleted as attached.

To Bid book holders:

Replace page 5 of the "Bid Item List" in the Bid book with the attached revised page 5 of the Bid Item List. The revised Bid Item List is to be used in the bid.

Inquiries or questions in regard to this addendum must be communicated as a bidder inquiry and must be made as noted in the Notice to Bidders section of the Notice to Bidders and Special Provisions.

Indicate receipt of this addendum by filling in the number of this addendum in the space provided on the signature page of the Bid book.

Submit bids in the Bid book you now possess. Holders who have already mailed their book will be contacted to arrange for the return of their book.

Inform subcontractors and suppliers as necessary.

This addendum and attachments are available for the Contractors' download on the Web site:

http://www.dot.ca.gov/hq/esc/oe/project_ads_addenda/04/04-4A0104

If you are not a Bid book holder, but request a book to bid on this project, you must comply with the requirements of this letter before submitting your bid.

Sincerely,


FOR BIJAN SARTIPI
District Director

Attachments

2-1.015 PREBID MEETING

The Department will conduct a prebid meeting for this contract. The purpose of this meeting is to share information with prospective bidders on the long life hot mix asphalt requirements for this project and the lessons learned from past projects with long life hot mix asphalt.

This prebid meeting is scheduled for 1 to 4 pm, on September 14, 2012, in Park View Room (15-700) at 111 Grand Avenue, Oakland, California.

All subcontractors, hot mix asphalt suppliers, and hot mix asphalt laboratories are encouraged to attend this meeting.

10-1.41 HOT MIX ASPHALT (LONG LIFE)

GENERAL

Summary

This work includes designing, producing and placing hot mix asphalt (HMA) using the QC/QA process. The types of HMA are:

1. HMA (15% Max RAP, Long Life)
2. HMA (25% RAP, Long Life)

Comply with requirements for HMA Type A in Section 39, "Hot Mix Asphalt," of the Standard Specifications and these special provisions.

The provisions in Section 4-1.035B, "Value Engineering Change Proposal," of the Standard Specifications do not apply to HMA (15% Max RAP, Long life), HMA (25% RAP, Long Life).

Mix Design

Design HMA (15% Max RAP, Long Life) and HMA (25% RAP, Long Life) mixes which meet the permanent deformation, fatigue, stiffness, and Hamburg wheel tracking test requirements enumerated in the HMA Performance Requirements Table.

HMA (15% Max RAP, Long Life) and HMA (25% RAP, Long Life), must meet performance requirements as follows:

HMA Performance Requirements

Design Parameters	Test Method	Sample Air Voids ²	Requirement		
			HMA (15% Max RAP, Long Life)	HMA (25% RAP, Long Life)	
Permanent deformation (min. stress repetitions) ^{3,4}	AASHTO T-320 Modified ¹	3% +/- 0.3%	360,000	360,000	
Beam Stiffness (psi) ⁴ At 20° C and 10 Hz At 30° C and 10 Hz	AASHTO T-321 Modified ¹	6% +/- 0.3%	415,000 to 486,000 220,000 (min)	870,000 to 1,000,000 --	
Fatigue (min. repetitions) ⁴ At 400x10 ⁻⁶ in./in. strain ⁵ At 200x10 ⁻⁶ in./in. strain ⁵	AASHTO T-321 Modified ¹	6% +/- 0.3%	23,000,000 345,000,000	25,000 950,000	
Moisture Sensitivity (min. repetitions) ⁶	AASHTO T-324 Modified ¹	7% +/- 1%	20,000	20,000	

Notes:

¹ Included in the testing procedure, LLP-AC2 (rolling wheel compaction), "Sample Preparation and Testing for Long-Life Asphalt Concrete Pavements" available at <http://www.dot.ca.gov/hq/esc/Translab/ofpm/fpmlab.htm>

² Air voids determined using AASHTO 209 (Method A)

³ In repeated simple shear test at constant height (RSST-CH) at a temperature of 55°C and a shear stress of 100 kPa

⁴ Minimum test value measured from tests on 3 specimens

⁵ Perform tests at 20° C and a 10 Hz load frequency. Results shall be reported for this strain level but may be obtained by extrapolation.

⁶ Minimum number of repetitions for rut depth of 0.5 in. at 50°C (average of 2 specimens)

Prepare samples for permanent deformation, fatigue, stiffness, and Hamburg wheel tracking testing using the procedure outlined in the procedure LLP-AC2, "Sample Preparation and Testing for Long-Life Asphalt Concrete Pavements," available at:

<http://www.dot.ca.gov/hq/esc/Translab/ofpm/fpmlab.htm>

Test for the permanent deformation, fatigue, stiffness, and Hamburg wheel tracking using AASHTO T-320 modified, AASHTO T-321 modified, and AASHTO T324 modified, respectively, as included in the testing procedure, LLP-AC2. Testing for permanent deformation, fatigue, stiffness and Hamburg Wheel Tracking must be performed by one of the following laboratories or an AASHTO accredited laboratory:

- 1 The Asphalt Institute
P.O. Box 14052
Lexington, KY 40512-4052
Contact: Mr. Phil Blankenship
Phone: (859) 288-4986
- 2 Advanced Asphalt Technologies (AAT)
108 Powers Court, Suite 108
Sterling, VA 20166-9321
Contact: Dr. Ray Bonaquist
Phone: (703) 444-4200
3. University of California Pavement Research Center (UCPRC)
1353 South 46th Street, Bldg. 480
Richmond, CA 94804
Contact: Dr. James Signori
Phone: (510) 665-3669

HMA (15% Max RAP, Long Life) and HMA (25% RAP, Long Life), must have the following HMA quality requirements:

Hot Mix Asphalt Mix Quality Requirements Table

Design Parameters	Test Method	Requirement ^a		Recommended	
Swell (max, mm) ^b	CT 305	0.76		--	
Air Voids content (%) ^{c, d} HMA (15% Max RAP, Long Life) HMA (25% RAP, Long Life)	CT 367	TV _{AV A} TV _{AV B}		3 – 5 3 – 5	
		Minimum	Maximum	Minimum	Maximum
Hveem Stabilometer Value ^{c, e} HMA (15% Max RAP, Long Life)	CT 366	TV _{SA} ^f	--	37	--
		TV _{SAm} ^g	--	35	--
HMA (25% RAP, Long Life)	CT 366	TV _{SB} ^f	--	37	--
		TV _{SBm} ^g	--	35	--
Voids in Mineral Aggregate (%) HMA (15% Max RAP, Long Life) HMA (25% RAP, Long Life)	LP-2 ^h	TV _{VMAA}	--	13	--
		TV _{VMAB}	--	13	--
Voids Filled with Asphalt (%) HMA (15% Max RAP, Long Life) HMA (25% RAP, Long Life)	LP-3 ^h	65	75	65	75
		65	75	65	75
Dust Proportion HMA (15% Max RAP, Long Life) HMA (25% RAP, Long Life)	LP-4 ^h	0.6	1.2	0.6	1.2
		0.6	1.2	0.6	1.2
Tensile Strength Ratio HMA (15% Max RAP, Long Life) HMA (25% RAP, Long Life)	CT 371	80	--	--	--
		80	--	--	--

Notes:

^a HMA must meet the requirements of "Hot Mix Asphalt Performance Requirements." Target values established in the mix design must be used for target values in quality control and acceptance.

^b Measured at mix design only.

^c Prepare sets of 3 briquettes from a single split sample. Report individual and average test results.

^d Calculate the air voids content of each specimen using California Test 309 and Lab Procedure LP-1.

^e Modify California Test 367, Paragraph C5, to use the exact target value for air voids content

^f If the range of stability for the 3 briquettes is more than 12 points, the results must be reported and all briquettes must be discarded. Fabricate a new set of 3 briquettes and test for each failed stability determination.

^g Modify California Test 366 — 150 tamps at 500 psi tamping pressure and 230 °F compaction temperature; cool specimens to 140 °F; apply additional 500 tamps at 500 psi tamping pressure and 140 °F compaction temperature; apply 12,600 lb. leveling load; and perform stabilometer test at 140 °F.

^h Lab Procedures are located at <http://www.dot.ca.gov/hq/esc/Translab/ofpm/fpmlab.htm>

Submittals

With the job mix formula (JMF) submittal for HMA (15% Max RAP, Long Life) and HMA (25% RAP, Long Life) also submit:

1. Test results which demonstrate that plant-produced HMA conforms with requirements in the HMA Performance Requirements Table.
2. Target values from the following Target Value Table:

Target Value Table		
Properties	Abbreviation	Target Values
Air Voids content (%)		
HMA (15% Max RAP, Long Life)	TV _{AV A}	_____
HMA (25% RAP, Long Life)	TV _{AV B}	_____
Hveem Stabilometer Value		
HMA (15% Max RAP, Long Life)	TV _{SA}	_____
HMA (25% RAP, Long Life)	TV _{SB}	_____
Modified Hveem Stabilometer Value ^d		
HMA (15% Max RAP, Long Life)	TV _{SAm}	_____
HMA (25% RAP, Long Life)	TV _{SBm}	_____
Voids in Mineral Aggregate (%)		
HMA (15% Max RAP, Long Life)	TV _{VMAA}	_____
HMA (25% RAP, Long Life)	TV _{VMAB}	_____

Notes:

A HMA (15% Max RAP, Long Life)

B HMA (25% RAP, Long Life)

C Modify California Test 366 — 150 tamps at 500 psi tamping pressure and 230 °F compaction temperature; cool specimens to 140 °F; apply additional 500 tamps at 500 psi tamping pressure and 140 °F compaction temperature; apply 12,600 lb. leveling load; and perform stabilometer test at 140 °F.

3. California Test 204 plasticity index results
4. California Test 371 tensile strength ratio results for untreated HMA
5. California Test 371 tensile strength ratio results for HMA treated with lime slurry
6. Test results for:
 - 6.1 Crushed particles
 - 6.2 Coarse durability index
 - 6.3 Fine durability index

Sample HMA (15% Max RAP, Long Life) and HMA (25% RAP, Long Life) at production start up evaluation and every 5,000 tons. Split samples into 2 parts. Submit 1 part to the Engineer, and use 1 part for your California Test 371. Submit California Test 371 test results to:

Moisture_Tests@dot.ca.gov

Sample HMA (15% Max RAP, Long Life) and HMA (25% RAP, Long Life) at production start-up evaluation and every 10,000 tons. Split samples into 2 parts. Submit 1 part to the Engineer, and use 1 part for your Hamburg Wheel Tracking Test. Submit the Hamburg Wheel Tracking Test results to the Engineer.

Data Cores

Three business days before starting coring, submit proposed methods and materials for backfilling data core holes. Submit to the Engineer and electronically to Coring@dot.ca.gov:

1. A summary of data cores taken
2. A photograph of each data core

For each data core, the summary must include:

1. Project identification number
2. Date cored
3. Core identification number
4. Type of materials recovered
5. Type and approximate thickness of unstabilized material not recovered
6. Total core thickness
7. Thickness of each individual material to within:
 - 7.1. For recovered material, 1/2 inch
 - 7.2. For unstabilized material, 1.0 inch
8. Location including:
 - 8.1. County
 - 8.2. Route
 - 8.3. Post mile
 - 8.4. Lane number
 - 8.5. Lane direction
 - 8.6. Station

Each data core digital photograph must include a ruler laid next to the data core. Each photograph must include:

1. The core
2. Project identification number
3. Core identification number
4. Date cored
5. County
6. Route
7. Post mile
8. Lane number
9. Lane direction

After data core summary and photograph submittal, dispose of cores under Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Prepaving Conference

No more than 30 days following approval of this contract, meet with the Engineer at a prepaving conference at a mutually agreed time and place. Discuss mix design, quality control and acceptance testing, and HMA production and placement. The following must attend the meeting:

1. Project manager
2. Project engineer
3. Superintendent
4. Foreman
5. HMA producer
6. HMA paver
7. Quality control managers
8. Laboratory supervisors from all testing firms performing mix design, performance testing and quality control testing
9. Laboratory supervisor for the laboratory conducting performance testing during mix design may attend by teleconference. You will make arrangements for the teleconference.

All parties must be present. If a party cannot attend this mandatory meeting at the time scheduled, the meeting will be delayed until such time as all parties can be present, or the meeting will be repeated with all parties present.

This meeting will be in addition to the pre-construction conference. The meeting may be an extension of the pre-construction conference. If necessary, pay for the cost of the meeting site.

This meeting does not relieve you of responsibility under the contract for the successful completion of the work in conformance with the requirements of the plans and specifications.

MATERIALS

Asphalt Binder

The grade of asphalt binder mixed with aggregate for HMA (15% Max RAP, Long Life) must be PG 64-28PM.

The grade of asphalt binder mixed with aggregate for HMA (25% RAP, Long Life) must be PG 64-10. You may request to the Engineer in writing to use a softer PG binder to meet the performance requirements in HMA Performance Requirements Table.

Tack Coat

For tack coat, use CRS2, CQS1, asphalt binder, or PMCRS2 asphaltic emulsion.

Aggregate

The aggregate for HMA (15% Max RAP, Long Life) and HMA (25% RAP, Long Life) must comply with the 3/4 inch grading.

Before the addition of asphalt binder and lime treatment, aggregate must comply with:

Aggregate Quality

Quality	Test	Quality Requirement
Percent of Crushed Particles (Min.) Coarse Aggregate ^c Fine Aggregate (Passing No. 4, Retained on No. 8)	CT 205 ^b	98% 98%
Los Angeles Rattler Loss at 100 Rev. (% max loss) Loss at 500 Rev. (% max loss)	CT 211	10 25
Sand Equivalent ^a (Min.)	CT 217	50
Sodium sulfate soundness ^d (% max loss)	CT 214	25
Coarse durability index (D _c) (min)	CT 229	65
Fine durability index (D _f) (min)	CT 229	50

Notes:

^a Reported value shall be the average of 3 tests from a single split sample.

^b The last sentence of the third paragraph in Section D, "Test Procedure," of CT 205 is modified to read: "Any particle having two or more fresh mechanically fractured faces shall be considered a crushed particle."

^c Perform tests on the materials retained on the No. 4 sieve from each sample of separately sized aggregate. Do not use or report the weighted average.

^d Not required for production start up evaluation.

The samples of each separately sized coarse aggregate must have a minimum crushed particle value of 98 percent under California Test 205, modified as follows:

1. Perform tests on the material retained on the No. 4 sieve from each sample of separately sized aggregate. Do not use or report the weighted average.
2. Consider any particle having two or more fresh mechanically fractured faces to be a crushed particle.
3. Prepare each test specimen by hand shaking a single loading of the entire sample for 30 seconds on a 12-in diameter, No. 4 sieve nested on top of a 12-in diameter, No. 8 sieve. Additional sieves may be added for convenience providing that the material retained on the No. 4 and larger sieves are recombined to form one sample.
4. Use samples of 1000 ± 10 g for material retained on the No. 4 sieve.
5. Calculate the crushed particles to the nearest 0.1 percent. If the crushed particles percentage is not a whole number, report it as the next higher whole percentage.

Antistrip Treatment

Treat aggregate with lime slurry under "Hot Mix Asphalt Aggregate Lime Treatment - Slurry Method." For the mix design, use Lab Procedure LP-7.

Reclaimed Asphalt Pavement (RAP)

HMA (25% RAP, Long Life) requires Reclaimed Asphalt Pavement (RAP) aggregate for part of the virgin aggregate in HMA in a quantity equal to 25.0 percent.

Test 3 representative RAP samples to determine the aggregate gradation correlation factors. Split each representative RAP sample into 3 parts. Determine the asphalt binder content of one part RAP sample under ASTM D 2172, Method B. Determine the asphalt binder content of one part RAP sample under AASHTO T 308. Determine the theoretical maximum specific gravity of each RAP sample under AASHTO T 209. Perform sieve analysis of each part of the RAP sample of recovered aggregate under California Test 202, Appendix A. The correlation factor for each sieve is determined by taking the average gradation of the ASTM D 2172 split samples minus the average gradation of the AASHTO T 308, Method A split samples.

RAP Stockpile Management

Provide enough space for meeting all RAP handling requirements at your facility. Provide a clean, graded base, well drained area for stockpiles.

When RAP is from multiple sources blend the RAP thoroughly and completely before fractionating. Fractionate RAP into 2 sizes, a coarse fraction RAP retained on ½" sieve and a fine fraction RAP passing the ½" sieve. RAP that has been fractionated is called processed RAP. Isolate the processed RAP stockpiles from other materials. Store processed RAP in conical or longitudinal stockpiles. Processed RAP must not be agglomerated or be allowed to congeal in large stockpiles.

Sample and test processed RAP at a minimum frequency of one sample per 1000 tons with a minimum of 6 samples per fractionated stockpile to assure that its asphalt binder content and specific gravity meet the processed RAP quality characteristics. If a fractionated RAP stockpile is augmented, you must sample and test processed RAP quality characteristics at a minimum frequency of one sample per 500 tons of augmented RAP.

The quality characteristic for processed RAP asphalt binder content is determined by ASTM D 2172 (Method B). If new fractionated RAP stockpiles are required, the average binder content of the new fractionated RAP stockpile must be within ± 2.0 percent of the average binder content of the original fractionated RAP stockpile. Submit a new JMF when the average binder content in a new fractionated RAP stockpile is more than ± 2.0 percent from the average binder content of the original fractionated RAP stockpile used in the mix design.

The quality characteristic for maximum specific gravity for processed RAP, determined by AASHTO T 209, is the average maximum specific gravity reported on page 4 of Form CEM-3512 ± 0.060 . Submit a new JMF when the processed RAP specific gravity is more than ± 0.060 from the average maximum specific gravity reported on page 4 of Form CEM-3512.

RAP Quality Control-HMA Production

Sample RAP twice daily and perform RAP quality control testing each day.

Determine the RAP aggregate gradation at least once a day during production under AASHTO T 308, Method A, and California Test 202. Submit the results to the Engineer with the combined aggregate gradation within 2 days of taking sample.

Determine the RAP moisture content at least twice a day during production and adjust the plant controller.

Job Mix Formula (JMF)

Job Mix Formula Submittal

If the plasticity index is greater than 10 and/or the results from California Test 371 show the minimum tensile strength ratio of the lime treated HMA is less than 70, the Engineer rejects your JMF submittal.

Job Mix Formula Verification

Do not place HMA (15% Max RAP, Long Life) and HMA (25% RAP, Long Life) until the Engineer has verified the mixes.

Mix design binder content and gradations reported on CEM 3512 are the target values for JMF. You may not adjust any target values during JMF verification.

Verification includes testing for compliance with:

1. HMA quality in the table Hot Mix Asphalt Quality Requirements except air voids content (target value +/- 2.0 percent)
2. CT 371 equal or greater than 70

Production Start Up Evaluation

The Engineer evaluates HMA (15% Max RAP, Long Life) and HMA (25% RAP, Long Life) production and placement at production start-up evaluation. Do not proceed with paving more than 750 tons before receipt of the production start up evaluation test results within 5 business days of sampling.

Quality Control and Assurance Quality Control Inspection, Sampling, and Testing

The minimum random sampling and testing for quality control for HMA (15% Max RAP, Long Life) and HMA (25% RAP, Long Life) is:

Minimum Quality Control – QC / QA

Quality Characteristic	Test Method	Minimum Sampling and Testing Frequency	HMA			Location of Sampling	Max. Reporting Time Allowance
			15% Max RAP, Long Life	25% RAP, Long Life			
Aggregate gradation	CT 202	1 per 750 tons	JMF \pm Tolerance ^a	JMF \pm Tolerance ^a		CT 125	24 hours
Asphalt binder content (%)	CT 379 or 382		JMF ± 0.3	JMF ± 0.3		CT 125	
Percent of maximum theoretical density (%)	CT 375	b, g	94 – 97	94 – 97		QC Plan	
Aggregate moisture content at continuous mixing plants and RAP moisture content at continuous mixing plants and batch mixing plants ^c	CT 226 or CT 370	2 per day during production	--	--		Stock-piles or cold feed belts	--
Sand equivalent (min.) ^d	CT 217	1 per 750 tons	50	50		CT 125	24 hours
HMA moisture content (% max.)	CT 226 or CT 370	1 per 2,500 tons but not less than 1 per paving day	1.0	1.0		QC Plan	24 hours
Stabilometer Value (min.) ^d	CT 366	1 per 4,000 tons or 2 per 5 business days, whichever is more	TV _{SA}	TV _{SB}			48 hours
Modified Stabilometer Value (min.) ^e			TV _{SA mod} ^e	TV _{SB mod} ^e			
Air voids content (%) ^{d, f}	CT 367		TV _{AVA} ± 2	TV _{AVB} ± 2			

Percent of crushed particles (% min) Coarse aggregate 2 fractured faces Fine aggregate (Passing No. 4 sieve and retained on No. 8 sieve.) 1 fractured face	CT 205	As necessary and designated in the QC Plan.	98	98		CT 125	48 hours
Fine aggregate angularity (% min.)	AASHTO T 304, Method A	At least once per project.	98	98			
Los Angeles Rattler (% max.) Loss at 100 rev. Loss at 500 rev.	CT 211	1 per 3,000 tons but not less than 1 per paving day	45	45			
Coarse durability index (D_c) (min)	CT 229		10	10			
Fine durability index (D_f) (min)	CT 229		25	25			
Flat and elongated particle (% max. by weight @ 5:1)	ASTM D 4791	As necessary and designated in the QC Plan.	65	65			
Voids in mineral aggregate (% min.)	LP-2		50	50			
Voids filled with asphalt (%)	LP-3	At least once per project.	Report only				
Dust proportion	LP-4		TV _{VMAA}	TV _{VMAB}		LP-2	
			65 - 75	65 - 75		LP-3	
			0.6 - 1.2	0.6 - 1.2		LP-4	
Smoothness		"Hot Mix Asphalt Pavement Smoothness" of these Special Provisions					

Notes:

^a The tolerances must comply with the allowable tolerances in Section 39-1.02E, "Aggregate."

^b Determine maximum theoretical density (California Test 309) at the frequency specified for test maximum density under California Test 375, Part 5 D.

^c For adjusting the plant controller at the HMA plant.

^d Report the average of 3 tests from a single split sample.

^e Modify CT 366 — 150 tamps at 500 psi tamping pressure and 230 °F compaction temperature; cool specimens to 140 °F; apply additional 500 tamps at 500 psi tamping pressure and 140 °F compaction temperature; apply 12,600 lb. leveling load; and perform stabilometer test at 140 °F.

^f Determine the bulk specific gravity of each lab-compacted briquette under California Test 308, Method A, and theoretical maximum specific gravity under California Test 309.

^g Determine percent of maximum theoretical density under California Test 375 except use:

1. California Test 308, Method A, to determine in-place density of each density core instead of using the nuclear gauge in Part 4, "Determining In-Place Density By The Nuclear Density Device."
2. California Test 309 to determine maximum theoretical density instead of calculating test maximum density in Part 5, "Determining Test Maximum Density."

Engineer Acceptance

The Engineer samples HMA (15% Max RAP, Long Life) and HMA (25% RAP, Long Life) for acceptance testing and tests for:

HMA Acceptance – QC / QA

Index (i)	Quality Characteristic	Weighting Factor (w)	Test Method	HMA		
				15% Max RAP, Long Life	25% RAP, Long Life	
	Aggregate gradation			JMF \pm Tolerance ^a		
	Sieve					
1	1/2"	0.05	CT 202			
2	No. 8	0.10				
3	No. 200	0.15				
4	Asphalt binder content (%)	0.30	CT 379 or 382	JMF \pm 0.3	JMF \pm 0.3	
5	Percent of maximum theoretical density (%) ^{b, c}	0.40	CT 375	94 – 97	94 – 97	
	Sand equivalent (min.) ^d		CT 217	50	50	
	Stabilometer value (min.) ^d		CT 366	TV _{SA}	TV _{SB}	
	Modified Stabilometer value (min.) ^e		CT 366	TV _{SA mod}	TV _{SB mod}	
	Air voids content (%) ^{d, f}		CT 367	TV _{AVA} \pm 2	TV _{AVB} \pm 2	
	Percent of crushed particles coarse aggregate (% min.) Two fractured faces		CT 205	98	98	
	Fine aggregate (% min) (Passing No. 4 sieve and retained on No. 8 sieve.) One fractured face			98	98	
	HMA moisture content (% max.)		CT 226 or CT 370	1.0	1.0	
	Los Angeles Rattler (% max.) Loss at 100 rev. Loss at 500 rev.		CT 211	10 25	10 25	
	Fine aggregate angularity (% min.)		AASHTO T 304, Method A	45	45	
	Coarse durability index (D _c) (min)		CT 229	65	65	
	Fine durability index (D _f) (min)		CT 229	50	50	
	Flat and elongated particle (% max. by weight @ 5:1)		ASTM D 4791	Report only		

	Voids in mineral aggregate (% min.)		LP-2	TV _{VMAA}	TV _{VMAB}	
	Voids filled with asphalt (%)		LP-3	65 - 75	65 - 75	
	Dust proportion ¹		LP-4	0.6 – 1.2	0.6 – 1.2	
	Smoothness		"Hot Mix Asphalt Pavement Smoothness" of these Special Provisions			
	Asphalt binder		Various	Section 92	Special Provisions and Section 92	

Notes:

^a The tolerances must comply with the allowable tolerances in Section 39-1.02E, "Aggregate."

^b The Engineer determines percent of maximum theoretical density under California Test 375 except the Engineer uses:

1. California Test 308, Method A, to determine in-place density of each density core instead of using the nuclear gauge in Part 4, "Determining In-Place Density By The Nuclear Density Device."
2. California Test 309 to determine maximum theoretical density instead of calculating test maximum density in Part 5, "Determining Test Maximum Density."

^c The Engineer determines maximum theoretical density (California Test 309) at the frequency specified for Test Maximum Density under California Test 375, Part 5.D.

^d The Engineer reports the average of 3 tests from a single split sample.

^e Modify CT 366 — 150 tamps at 500 psi tamping pressure and 230 °F compaction temperature; cool specimens to 140 °F; apply additional 500 tamps at 500 psi tamping pressure and 140 °F compaction temperature; apply 12,600 lb. leveling load; and perform stabilometer test at 140 °F.

^f The Engineer determines the bulk specific gravity of each lab-compacted briquette under California Test 308, Method A, and theoretical maximum specific gravity under California Test 309.

The Department does not use California Test 371 or Hamburg wheel tracking test results during production to determine specification compliance.

CONSTRUCTION

Material Transfer Vehicle

When the atmospheric temperature during paving is below 70 °F or when the time from discharge to truck at the HMA plant until transfer to the paver's hopper is 90 minutes or greater, use a material transfer vehicle (MTV). The MTV must:

1. Either receive HMA directly from the truck or use a pickup head to load it from a windrow that can be deposited on the roadway surface for a maximum of 100 feet in length.
2. Remix the HMA, with augurs, before loading the paver.
3. Transfer HMA directly into the paver's receiving hopper or feed system.
4. Have sufficient capacity to prevent stopping the paver.

PAYMENT

Full compensation for taking samples of asphalt concrete for RAP mix design, including coring, grinding, backfilling cores, placing HMA in the ground areas, and compacting, is included in the contract price paid for the type of HMA designated in the Engineer's Estimate and no additional compensation is allowed therefor.

The contract lump sum price paid for data core includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in data coring, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

BID ITEM LIST

04-4A0104

Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
41	190110	LEAD COMPLIANCE PLAN	LS	LUMP SUM	LUMP SUM	
42	190185	SHOULDER BACKING	TON	380		
43	194001	DITCH EXCAVATION	CY	40		
44	198010	IMPORTED BORROW (CY)	CY	9,630		
45	198208	SUBGRADE ENHANCEMENT GEOTEXTILE, CLASS B1	SQYD	8,480		
46	202011	MULCH	CY	640		
47	203021	FIBER ROLLS	LF	11,600		
48	203026	MOVE-IN/MOVE-OUT (EROSION CONTROL)	EA	18		
49	203027	EROSION CONTROL (BONDED FIBER MATRIX) (SQFT)	SQFT	104,000		
50	250201	CLASS 2 AGGREGATE SUBBASE	CY	5,660		
51	260210	AGGREGATE BASE (APPROACH SLAB)	CY	84		
52	044033	AGGREGATE BASE (ABUTMENT)	CY	84		
53	260303	CLASS 3 AGGREGATE BASE (CY)	CY	7,640		
54	024505	LEAN CONCRETE BASE RAPID SETTING	CY	5,370		
55	390132	HOT MIX ASPHALT (TYPE A)	TON	1,410		
56	390134	HOT MIX ASPHALT (OPEN GRADED)	TON	36,800		
57	390135	HOT MIX ASPHALT (LEVELING)	TON	33,800		
58	024506	HOT MIX ASPHALT (25% RAP, LONG LIFE)	TON	131,000		
59	024507	HOT MIX ASPHALT (15% MAX RAP, LONG LIFE)	TON	69,100		
60	BLANK					